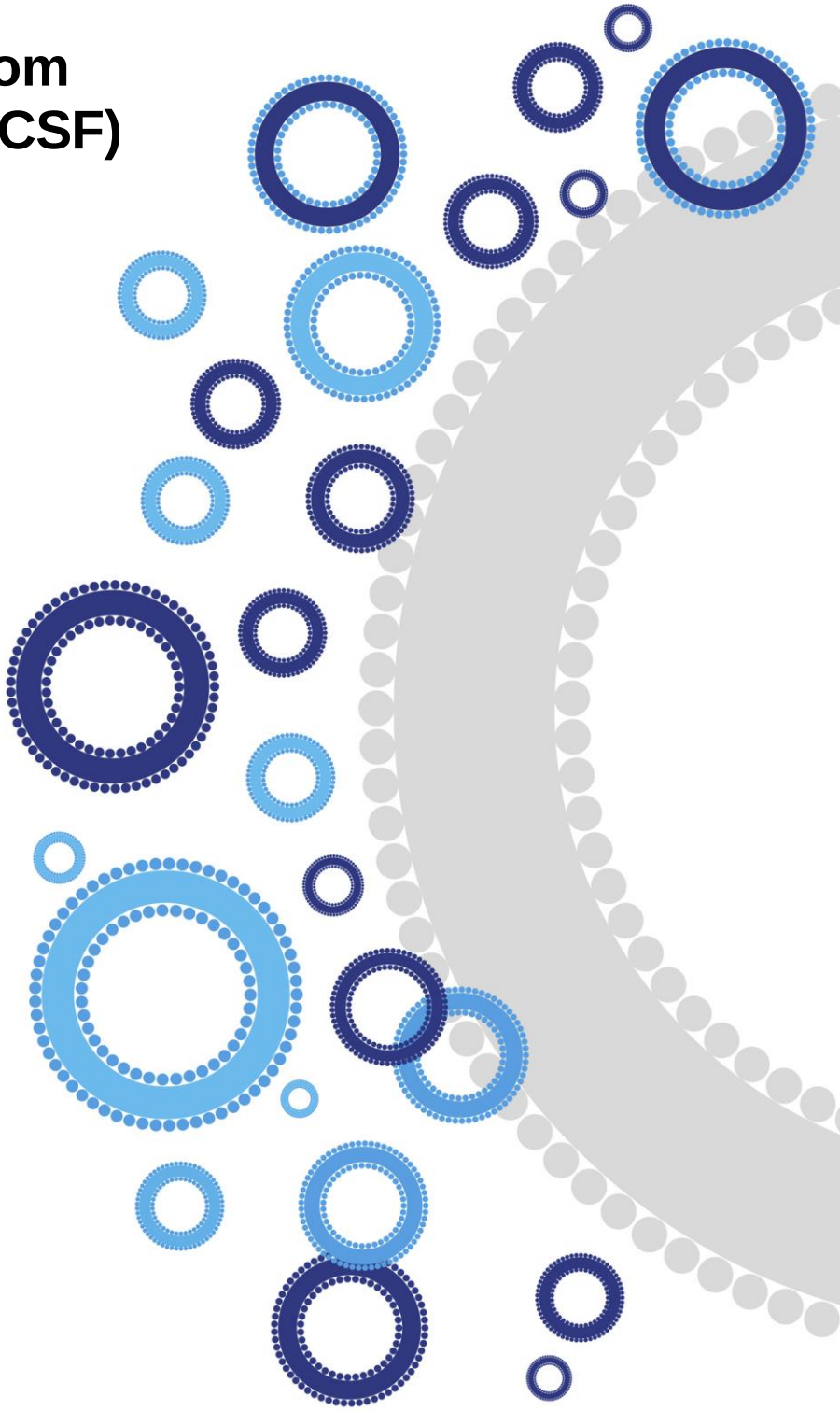
Application Note

Exosome isolation from Cerebrospinal Fluid (CSF)



Exosome isolation from CSF using Exo-spin™ exosome purification kit

Data Courtesy of Tânia Soares Martins *et al. 2018* as published in PLoS One journal
University of Aveiro, Portugal (Issued March, 18th 2019)

- **Experiment**
  Isolate exosomes using Exo-spin™
- **Exosomes origin**
  CSF
- **Initial sample volume**
  5 ml per Exo-spin™ column
- **Elution sample volume**
  200 µl per sample in PBS

Summary

Exosomes may be able to pass through the blood-brain barrier although the mechanism is not well-understood. This property makes exosome research attractive for areas such as biomarker discovery for neurodegenerative diseases and also drug delivery. To advance these areas of research, efficient and reproducible methods for isolating exosomes from small volumes of CSF need to be developed.

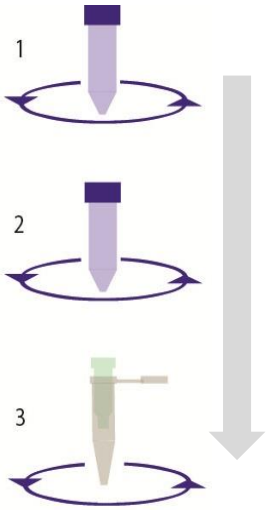
In this study, the Exo-spin™ exosome isolation system is compared to two precipitation methods using 5 ml of CSF as the starting sample. The Exo-spin™ method has been identified as superior. Among other factors, yield, purity, as well as structural integrity of the generated samples have been analysed as part of this comparison. Nanoparticle Tracking Analysis (NTA), exosome protein to particle ratio, Western Blot and Transmission Electron Microscopy (TEM) were used to generate comparative data.

Key Features of Exo-spin™

- **Excellent yield** – Even from very small volumes
- **High exosome purity** – Ultra-low protein and rRNA contamination
- **Consistent results** – Fast and easy protocol

Methods

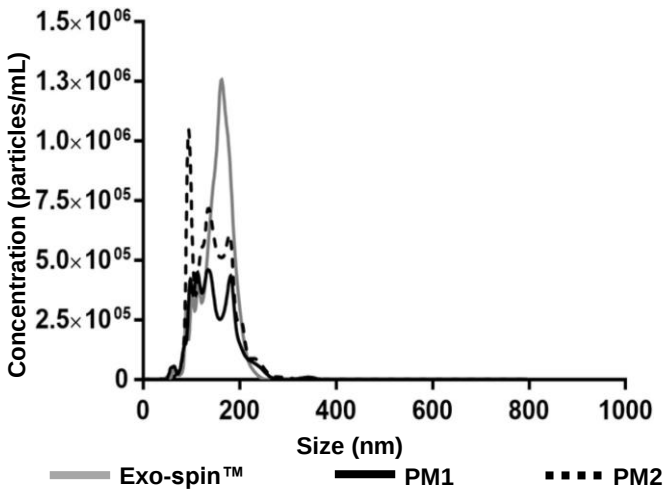
Exo-spin™ kit can be used to reliably isolate exosomes in 3 easy steps, by combining Precipitation and Size Exclusion Chromatography (SEC), the two most effective methods. A simple representation of this method is shown below.



1. Remove cells and cellular debris
2. Precipitate exosomes containing pellet using Exo-spin™ Buffer
3. Purify exosomes using Exo-spin™ SEC Columns

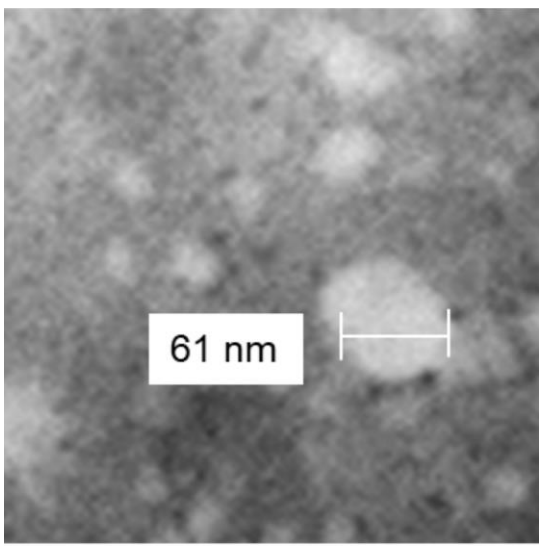
Results

A



(A) Size profiles of CSF exosomes isolated using different methods. Data determined by NTA. Each curve represents the average of 3 technical replicate measurements for each exosome isolation method. CSF sample triplicate experiment. (PM = Precipitation Method) (adapted from TS Martins *et al.*, PLoS One 13(6): e0198820 (2018))

B



(B) Morphology of exosomes pooled by TEM negative staining. Exosomes isolated using Exo-spin™ (adapted from TS Martins *et al.*, PLoS One 13(6): e0198820 (2018)).

For more information on our Exo-spin™ exosome purification kit, please visit our website www.cellgs.com.

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